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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,159	05/05/2005	Jens-Peter Schlomka	PHDE020257US	9967

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Philips Intellectual Property & Standards
595 Miner Road
Cleveland, OH 44143

EXAMINER

COCHRAN, ANTHONY K

ART UNIT	PAPER NUMBER
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2882

MAIL DATE	DELIVERY MODE
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04/30/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,159	SCHLOMKA ET AL.	
	Examiner	Art Unit	
	Anthony Cochran	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05/05/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Foreign Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 19(a)-(d). Conditions were met with the submission of a certified copy of application No. DE-102 52 662.1, filed on November 11, 2002, which has been placed of record in the file.

Claim Objections

Claim 4 objected to because of the following informalities:

Claim 4, line 13, delete the closed parenthesis ")" after unit

Claim 4, line 15-16, delete the redundant reference to claim 1

Appropriate correction is required

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-2 and 5-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 lines 6-8, claim 6 lines 8-10, and claim 7 lines 8-10 describe generating relative motion about an axis of rotation with the radiation source on the one side and

the examination zone or the object on the other side. This recitation is confusing and indefinite as it implies that the examination zone is rotated about the axis of rotation.

Claim 2, lines 2-3 recite "rays having a curved shape". This recitation is confusing and indefinite since rays travel in straight lines.

Claim 5, lines recite "rays having a curved shape". This recitation is confusing and indefinite since rays travel in straight lines.

Claims 3 and 4 are rejected for the above reasons by virtue of their dependency. The Examiner has examined the claims as best understood as follows.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 6-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Harding et al. (US 2002/0150202 A1).

With respect to claim 1, Harding et al. disclose a computed tomography method comprising the steps of:

a) generating (see fig. 1 and para 0020), using a radiation source (S) and a diaphragm arrangement (31 or 32) which is arranged between the examination zone (13) and the radiation source (S), a fan beam (solid lines in fig. 1, see also para 0006) which traverses an examination zone or an object present therein,

b) generating relative motions, comprising a rotation about an axis of rotation (14), between the radiation source (S) on the one side and the examination zone (13) or the object on the other side,

c) acquiring measuring values (para 0032, first sentence) which are dependent on the intensity of the radiation by means of a detector unit (D) which detects, during the relative motions, the primary radiation from the fan beam and radiation which is coherently scattered (see para 0006 and 0034) in the examination zone or on the object,

d) reconstructing a CT image (0023) of the examination zone (13) from the measuring values, during which reconstruction a back projection is carried out in a volume (voxel, see para 0004) which is defined by two linearly independent vectors (u and v) of the rotational plane and a wave vector transfer (momentum transfer; also see para 0032).

With respect to claim 6, Harding et al. disclosed a computer tomograph for carrying out the method claimed in claim 1, comprising (see fig 1 and para 0020) a radiation source (S) and a diaphragm arrangement (31 and 32) which is arranged between the examination zone (13) and the radiation source (S), in order to generate a fan beam (solid lines) which traverses an examination zone or an object present therein, a detector unit (D) which is coupled (gantry; 1) to the radiation source and comprises a measuring surface, a drive arrangement (motor; 5) for displacing an object present in the examination zone and the radiation source (motor; 2) relative to one another about an axis of rotation and/or parallel to the axis of rotation, a reconstruction unit (10) for

reconstructing the distribution of the scatter intensity within the examination zone from the measuring values acquired by the detector unit, a control unit (7) for controlling a radiation source, the detector unit, the drive arrangement and the reconstruction unit in conformity with the steps a) to d).

With respect to claim 7, Harding et al. disclose a computer readable medium containing instructions for controlling a control unit (7 communicating with computer 10) for controlling a radiation source (S), diaphragm arrangement, drive arrangement and the reconstruction unit of a computer tomograph so as to carry out a method comprising:

a) generating (see fig. 1 and para 0020), using a radiation source (S) and a diaphragm arrangement (31 or 32) which is arranged between the examination zone (13) and the radiation source (S), a fan beam (solid lines in fig. 1, see also para 0006) which traverses an examination zone or an object present therein,

b) generating relative motions, comprising a rotation about an axis of rotation (14), between the radiation source (S) on the one side and the examination zone (13) or the object on the other side,

c) acquiring measuring values (para 0032, first sentence) which are dependent on the intensity of the radiation by means of a detector unit (D) which detects, during the relative motions, the primary radiation from the fan beam and radiation which is coherently scattered (see para 0006 and 0034) in the examination zone or on the object,

d) reconstructing a CT image (0023) of the examination zone (see figs. 2 and 3 above) from the measuring values, during which reconstruction a back projection is carried out in a volume (voxel, see para 0004) which is defined by two linearly independent vectors (u and w) of the rotational plane and a wave vector transfer (momentum transfer; also see para 0032).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harding et al. as applied to claim 1 above, in further view of Grass et. al. (US 2001/0038678 A1).

With respect to claim 2, Harding et al. disclose a computed tomography method as claimed in claim 1.

Harding et al. fail to disclose where the back projection during the reconstruction step is performed along rays having a curved shape.

Grass et al. disclose in which the back projection during the reconstruction step is performed along rays having a curved shape (curved projections reconstructed; see fig 6 and para 0041-42).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Harding et al. to include the reconstruction step is performed along rays having a curved shape of Grass et al., since a person would have been motivated to use a cylindrical examination zone (13) to provide a means for dispensing with outer fan beams and the optimum distance of trajectories can be chosen (para 0055) as stated by Grass et al.

With respect to claim 5, Harding et al. disclose a computed tomography method as claimed in claim 1.

Harding et al. fail to disclose

a) rebinning the measuring data so as to form a number of groups), each group including a plurality of planes that extend parallel to one another and to the axis of rotation and contain a respective fan beam,

b) one-dimensional filtering of the data produced by the rebinning operation for each group in the direction perpendicular to the direction of the planes,

c) reconstructing the spatial distribution of the absorption by backprojection of the filtered data of a plurality of groups while taking into account filtered data from both trajectories for the backprojection in the intermediate region.

Grass et al. disclosed

a) rebinning the measuring data so as to form a number of groups (see fig. 6 and paras 0049-0051), each group including a plurality of planes that extend parallel (mutually parallel fan beams) to one another and to the axis of rotation and contain a respective fan beam (see also fig. 2 step 104) ,

b) one-dimensional filtering of the data produced by the rebinning operation (high-pass 1-D filtering, see para 0062) for each group in the direction perpendicular to the direction of the planes,

c) reconstructing the spatial distribution of the absorption by backprojection (see para 0063) of the filtered data of a plurality of groups while taking into account filtered data from both trajectories (T1 and T2; see also paras 0064-65) for the backprojection in the intermediate region (Z).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Harding et al. to include the rebinning and

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filtering in the image reconstruction method of Grass et al., since a person would have been motivated to use a method that involves an amount of calculation work that is small in comparison to other methods (see para 0017) as explicitly stated by Grass et al.

Allowable Subject Matter

Claim 3 and 4 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is the examiner's statement of reasons for allowance:

Per Claim 3, the computed tomography method as claimed in Claim 1 requires that the measuring values are multiplied by a first weighting factor which corresponds to the square of the distance between the scatter center, at which the detected ray was scattered, and the point of incidence of the scattered ray on the detector unit, and by a second weighting factor which corresponds to the reciprocal value of the cosine of the scatter angle. Claim 4 requires for said method that, prior to the back projection in the reconstruction step, all measuring values for each radiation source position are multiplied by a weighting factor which corresponds to the reciprocal value of the square of the distance between the radiation source position and the scatter center at which the detected ray was scattered. These features are neither shown nor fairly suggested in the prior art.

Response to Arguments

Applicant's arguments filed 02/06/2007 with respect to the specification have been fully considered but they are persuasive. The objections to the specification have been withdrawn.

Applicant's arguments filed 02/06/2007 with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

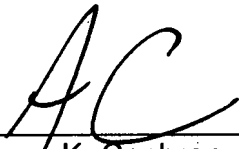
In addition, applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. Further, applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

Conclusion

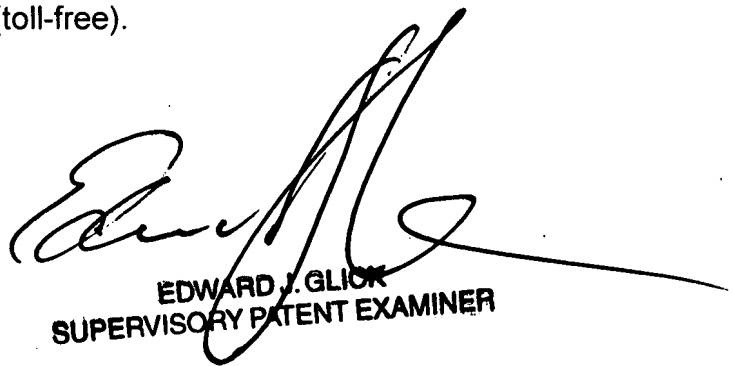
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Cochran whose telephone number is (571) 272-9794. The examiner can normally be reached on Monday - Friday from 8:00am to 5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick, can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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